

# Committee Updates



# Education Committee Update

Frank Klink  
Committee Chair



Committee Meeting on April 28, 2022, in Portland, Oregon

# Education Committee Overview

- Purpose
  - Provide guidance on the CRRC's educational activities to improve public awareness and comprehension of cool surfaces
- Scope
  - Create educational materials
  - Identify opportunities
  - Collaborate with other CRRC committees



# Committee Roster

NAME	AFFILIATION	CRRC MEMBER
Jay Cruz	Milenium Solutions	General Interest
Sid Dinwiddie	Asphalt Roofing Manufacturers Association	Industry
Jeremy Grunewald	Mule-Hide Products	Industry
Katie Hunt	Global Cool Cities Alliance	General Interest
Neetu Jain, <b><i>Vice Chair</i></b>	Global Cool Green City Foundation	General Interest
Frank Klink, <b><i>Chair</i></b>	Interested Individual	General Interest
Maria Koetter	Interested Individual	General Interest
Dale McIntyre	Behr Paint Company	Industry
David Sailor	Interested Individual	General Interest
Wade Shepherd	Westlake Royal Roofing	Industry
Kurt Shickman	Interested Individual	General Interest
Peter Turnbull	Peter Turnbull and Associates	General Interest
Steve Wadding	Polyglass USA	Industry
Howard Wiig	Hawaii State Energy Office	General Interest





# Newly Created Educational Resources





# Newly Created Educational Resources

## Designing Buildings for Heat Resilience and Energy Efficiency

### Continuing Education Course

On-Demand Webinar  
Sarah Schneider and James Kirby

#### Meet the Presenters



Sarah Schneider



James Kirby, AIA



[coolroofs.org/resources/factsheets-brochures](https://coolroofs.org/resources/factsheets-brochures)





# CRRC Educator Program



- Purpose CRRC Members are eligible to represent the organization as Authorized Educators
- Voluntarily conduct outreach and education (O&E) about the CRRC and/or cool roofs and walls
- The goal of the O&E is to support the CRRC mission and vision statement

[coolroofs.org/membership/crrc-educators](http://coolroofs.org/membership/crrc-educators)



# Current Project

## STEM Educational Curriculum for Middle Schoolers



Image Credit: Mohamed Sadek for NPR





# Education Committee Staff Contact

Sarah Schneider  
[sarah@coolroofs.org](mailto:sarah@coolroofs.org)





# Ratings, Codes & Standards (RCS) Committee Update

Jonathan Humble

Retired Committee Chair



# RCS Committee Overview

- Advocates for references to CRRC in various codes, standards (C&S), and programs
- Promotes use of CRRC Rating Programs and standards through education and outreach
- Conducts outreach to C&S and program developers
- Develops proposals for CRRC references in C&S and programs



# RCS Committee Overview

Committee does not develop CRRC standards, or advocate and lobby for specific requirements

## COMMITTEE ROSTER

Kurt Shickman, <i>Interim Chair</i>	Interested Individual	General Interest
Heather Estes	GAF	Industry
Wade Shepherd	Westlake Royal Roofing	Industry
Howard Wiig	Hawaii State Energy Office	General Interest



# Adopted References

## Model Codes & Standards

ASHRAE Standard 90.1 - 2022 \*

International Energy Conservation Code (IECC) - 2021 \*

International Green Construction Code (IgCC) - 2021 \*\*\*

RESNET (ANSI/RESNET/ICC 301 - 2022) \*

## Green Building Rating Systems

Leadership in Energy & Environmental Design (LEED)

Green Globes (ANSI/GBI 01) - 2021

GreenSeal (GS-11) - 2021

## Green Building Standards

CALGreen (Title 24, Part 6) - 2022

Evergreen Sustainable Development Standard, V4

*\* Adopted by several states and municipalities*

*\*\* Requires CRRC rated products*

*\*\*\* Joint document with ASHRAE and ICC*



# Adopted References

## California

California Title 24, Part 6 (CA Energy Code) - 2022 \*\*

California Title 24, Part 11 (CalGreen) - 2022 \*\*

Chula Vista Building Code \*\*

City and County of Los Angeles \*\*

## Municipalities

Chicago Energy Transformation Code - 2022

Denver Green Building Ordinance \*\*

District of Columbia Construction Codes (2017) \*\*

Miami Zoning Ordinance \*\*

## Rebate Programs

LADWP Cool Roof Rebate \*\*

Louisville Cool Roof Rebate Program \*\*

San Antonio Cool Roof Rebate \*\*

Toronto Eco-Roof Program

*\* Adopted by several states and municipalities*

*\*\* Requires CRRC rated products*

*\*\*\* Joint document with ASHRAE and ICC*



# Monitoring Active CRRC Proposals

Code, Standard or Program	CRRC 2021 Proposals	Submission Date	Status
IECC (2024)	<ol style="list-style-type: none"> <li>Request to update S100 reference</li> <li>Request to fix typo in Table C402.1</li> </ol>	<p>1. Jun. 2021</p> <p>1. Jul. 2021</p>	<p><b>Monitoring</b></p> <p>Expected publication early 2024</p>
IgCC (2023)	<ul style="list-style-type: none"> <li>Request to update S100 reference</li> </ul>	Sep. 2021	<p><b>Monitoring</b></p> <p>Expected publication in 2023</p>
ICC 700 (2024)	<ul style="list-style-type: none"> <li>Replace ENERGY STAR with CRRC-1 Program (roofs)</li> <li>Reference CRRC-2 (walls) and add “minimum initial” to existing language</li> </ul>	Feb. 2022	<p><b>Monitoring</b></p> <p>Expected publication in 2023</p> 



# Future Outreach Plans

- Contacting identified jurisdictions with recently adopted cool roof provisions
- Educating about outdated ENERGY STAR references
  - Sunset of ENERGY STAR Roofing Program on June 1, 2022
  - Reference CRRC to support compliance
- Tracking international adoption of CRRC standards or programs

## ENERGY STAR® Roof Program Alternative

### DID YOU KNOW THAT...?

The ENERGY STAR certification program for roofing products officially ends on June 1, 2022, at which point no ENERGY STAR certified roofing products will be available in the market or on the ENERGY STAR certified products list by order of the U.S. Environmental Protection Agency (EPA).

This guide provides helpful information to jurisdictions and programs that currently require ENERGY STAR certified roofing products for compliance with a code, standard, ordinance, rebate, or program on what they can do to avoid disruption.

### WHAT CAN YOU DO?

To help with ongoing compliance and enforcement of cool roof installations, you can update any references to ENERGY STAR with a reference to the CRRC-1 Roof Product Rating Program (CRRC-1 Program).

Replacing existing references to ENERGY STAR with the CRRC-1 Program ensures that the solar reflectance, thermal emittance, and/or solar reflectance index (SRI) values used for compliance are independently obtained, verified, and publicly accessible.

Referencing the CRRC-1 Program also allows for greater flexibility and control. Unlike certification programs like ENERGY STAR that require products to meet certain performance criteria, nearly any type of roofing product can be tested and rated in accordance with the CRRC-1 Program. This gives entities the ability to set their own requirements and define what is a "cool roof" in their own jurisdictions.

**SOLAR REFLECTANCE**  
The fraction of solar energy that is reflected by the roof

**SOLAR ENERGY HEATS THE ROOF SURFACE**

**THERMAL EMITTANCE**  
The relative ability of the roof surface to radiate heat

Some heat is absorbed by the roof and transferred into the building

This illustration describes the flow of radiant energy as heat between the sun, roof surface, building interior, and surroundings. The higher the solar reflectance, the more solar energy is reflected away from the roof surface. Some of the solar energy is absorbed by the roof as heat. The higher the thermal emittance, the more of this absorbed heat is radiated away from the roof surface. SOURCE: CRRC-1 COOL ROOF RATING COUNCIL

### Examples of CRRC Rated Roof Product References

California Building Energy Efficiency Standards (Title 24, Part 6)	See references to "CRRC-1" <a href="#">here</a>
City of Chula Vista Energy Code	See references to "Cool Roof Rating Council" <a href="#">here</a>
City of Denver Green Building Ordinance	See references to "Cool Roof Rating Council" <a href="#">here</a>
City of Louisville Cool Roof Incentive Program	See references to "Cool Roof Rating Council" <a href="#">here</a>
City of Los Angeles' Green Building Code	See references to "CRRC" <a href="#">here</a>
City of Los Angeles Cool Roof Rebate	See references to "CRRC" <a href="#">here</a>
County of Los Angeles Green Building Standards Code	See references to "CRRC" <a href="#">here</a>
City of Miami Land Use Ordinance	See references to "Cool Roof Rating Council" <a href="#">here</a>
City of Miami Beach Urban Heat Island Ordinance	See references to "CRRC" <a href="#">here</a>
Washington <a href="#">Evergreen Sustainable Development Standard</a> , v4.0	See references to "CRRC-1" <a href="#">here</a>

The CRRC was established in 1999 as a 501(c)(3) nonprofit organization that develops fair, accurate, and credible methods for evaluating and labeling the surface radiative properties (solar reflectance and thermal emittance) of roofing products.

The CRRC is an accredited ISO/IEC 17065 product certification body and is an ANSI Accredited Standards Developer Organization.

Learn more at [coolroofs.org](#)

### WHAT IS THE CRRC-1 PROGRAM?

The [CRRC-1 Program](#) is a third-party product rating program for roofing products that is administered by the Cool Roof Rating Council (CRRC). The program has been in existence since 2002 and was developed with input from a wide array of stakeholders ([learn more](#)).

The ratings are based on a product's surface radiative properties (solar reflectance and thermal emittance) and range from 0 to 1, with 1 being the most reflective or emissive. The ratings inform consumers how efficient the product is at reducing building energy use, increasing occupant comfort, and mitigating the urban heat island effect ([learn more](#)).

Over 3,000 roofing products are published in the [CRRC Rated Roof Products Directory](#), an online, publicly available database that policymakers, design professionals, building owners, and others have relied on for years for third-party data. The directory gives consumers the ability to search for and compare roofing products that comply with code requirements, green building certifications, and rebate programs.

The ratings are also on CRRC labels found on product packaging.

	Rated Product ID #: 0000-0000	
	Initial	Aged
<b>Solar Reflectance</b>	0.00	0.00
<b>Thermal Emittance</b>	0.00	0.00

The ratings above are subject to CRRC rating program conditions, requirements, and limitations. Visit [coolroofs.org](#) for important information and disclaimers about CRRC rating conditions, requirements, and limitations.

The standard CRRC Product Label. Usage requirements can be viewed at [coolroofs.org](#)



# RCS Committee Staff Contact

Sarah Schneider  
[sarah@coolroofs.org](mailto:sarah@coolroofs.org)





# Wall Rating Program Committee Update

Dale McIntyre

Committee Chair

# Wall Rating Program Committee Overview

- **Purpose**

- Develop and evaluate technical and program details for the CRRC Wall Rating Program

- **Scope**

- Evaluating technical issues (e.g., test methods, standard practices)
- Develop Program procedures and requirements
- Provide guidance on Program marketing
- Collaborate with other CRRC Committees to disseminate information about cool surfaces



# Wall Rating Program Committee Roster

	VOTING	AFFILIATION	ALTERNATE	AFFILIATION
1	Dale McIntyre, Chair	Behr Paint Company	Ginger Shi	Behr Paint Company
2	Alex Nicol	Sherwin-Williams	David Cocuzzi	National Coil Coating Association
3	Howard Wiig	Hawaii State Energy Office		
4	Ronnen Levinson	Lawrence Berkeley National Laboratory		
5	Steve Drennan	International Institute of Building Enclosure Consultants	Neal Johnson	International Institute of Building Enclosure Consultants
6	Tim Hebrink	3M	Evan Montanez	Cool Additives Technology (Coadtech)
7	Katherine Berry	American Coatings Association		
8	Brandon Bethke	Tempo Chemicals & Solutions	Jim Dunn	Vibrantz Technologies
9	Robert Bennett, Vice Chair	Tex-Cote	Eric Brown (pending)	Tex-Cote
10	Paige Kuplic (pending)	Axalta	Farhan Ansari (pending)	Dow Construction Chemicals
11	Wally Kesler	Dunn-Edwards	Chris Wessels	Dunn-Edwards
12	Bill Dean	Interested Individual		
13	Rankin Jays (pending)	Polyglass		
14	Jonathan Parfrey	Climate Resolve	Neetu Jain	Global Cool Green Cities Foundation
15	Ashley Timms	ACE Laboratories	Rich Slomko	Atlas Material Testing Technology

112 *\*pending members will be presented for Board approval on June 15, 2023*





# Substrates for Architectural Coatings

- Program requires a substrate with a solar reflectance of  $<0.20$
- Substrate requirement left open-ended to enable Licensees to obtain whichever substrate works best for them
- Licensees look to CRRC to provide more specific recommendations on where to obtain substrates



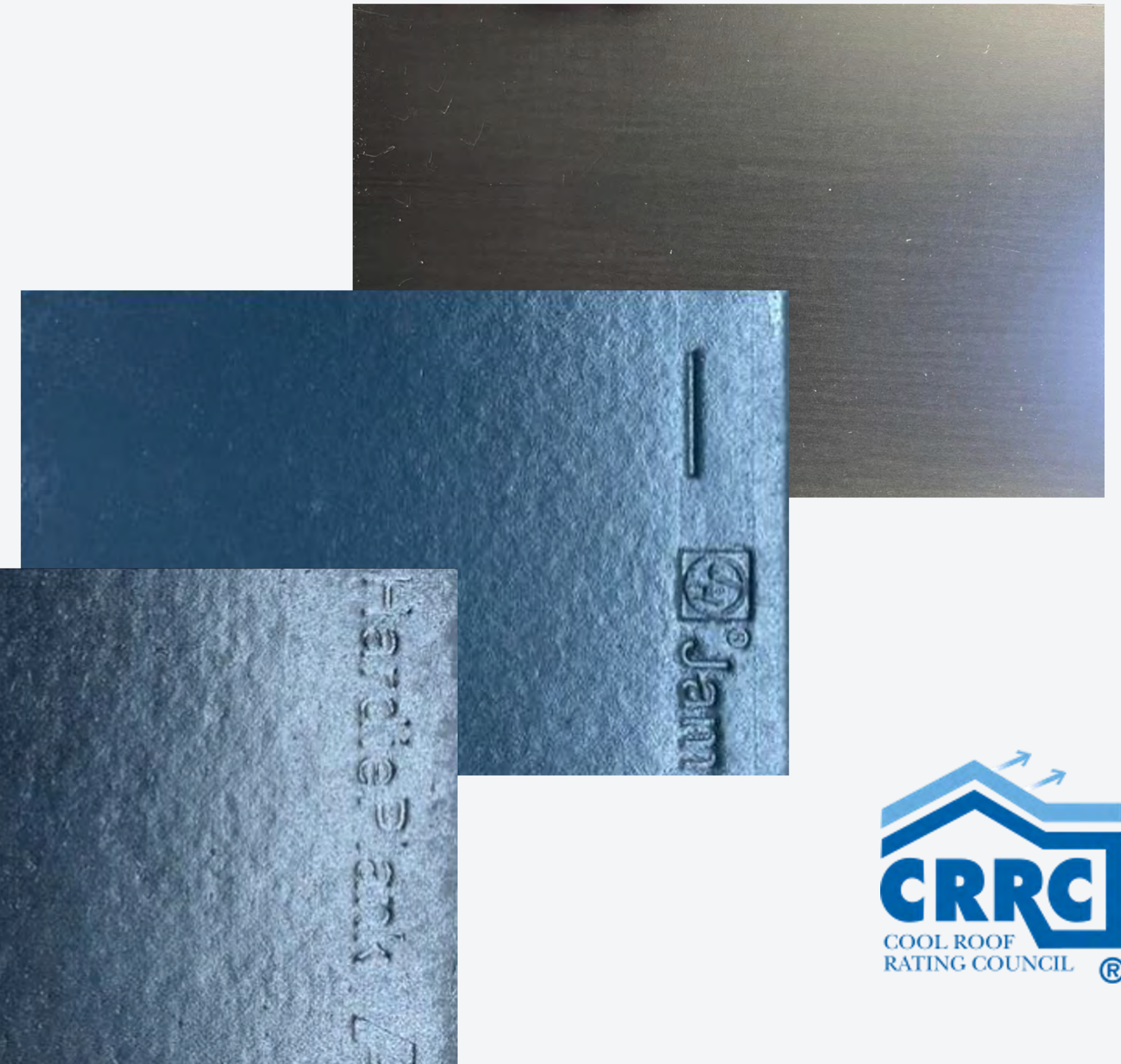


# WRPC Discussions – Substrates

- Initially the only identified substrate that met the requirement was a specialty alloy aluminum panel with a specialty anodizing treatment
- Concerns with availability, cost, turnaround time, and product quality
- WRPC and CRRC motivated to identify other options to facilitate rating products

# Wall Substrate Exploration

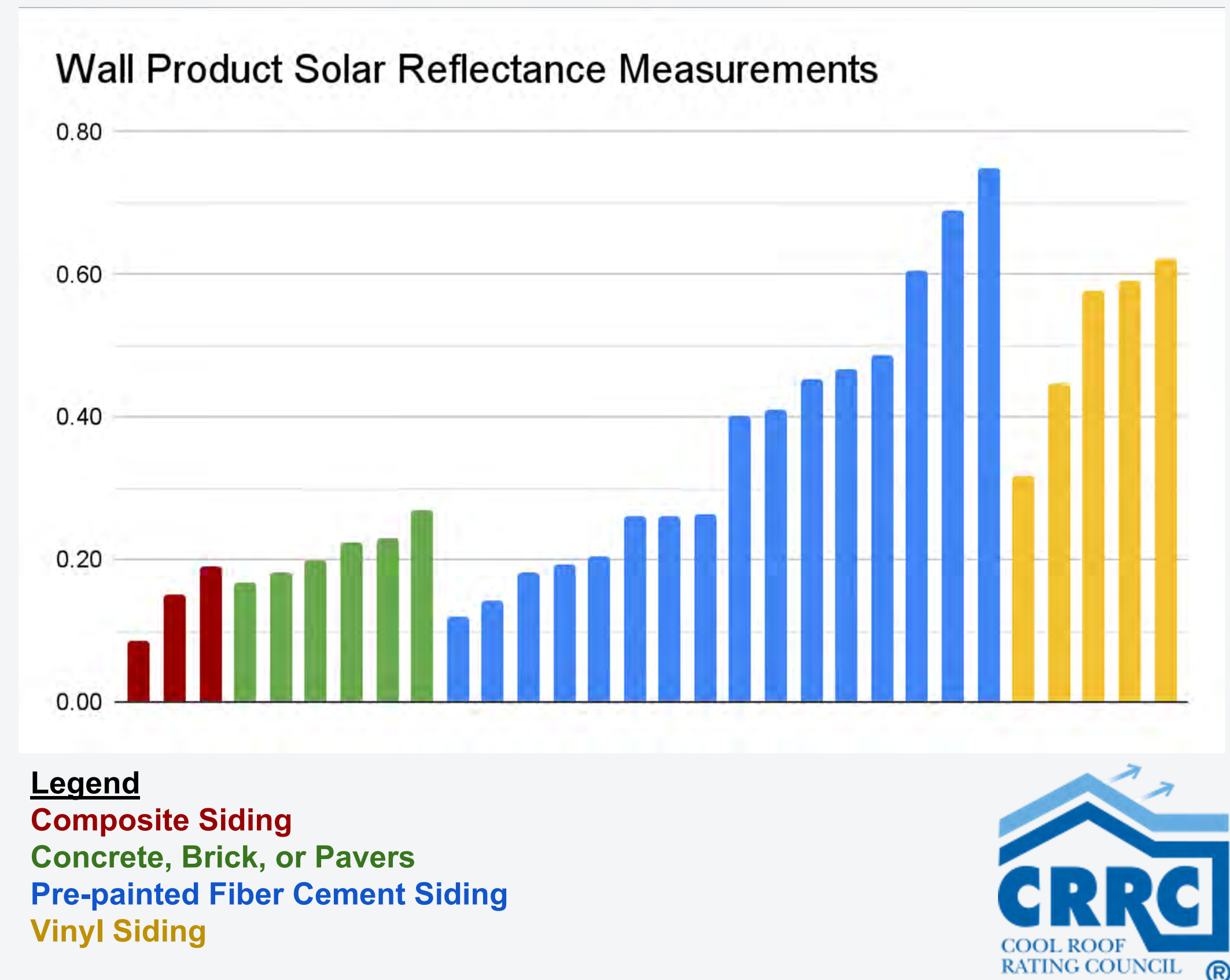
- Evaluated black primed coil coated metal
  - Concerns with availability, adhesion
- Researched other companies to provide anodization
- Expanded the requirement to allow for other materials besides metal, such as pre-painted fiber cement





# Wall Substrate Exploration (continued)

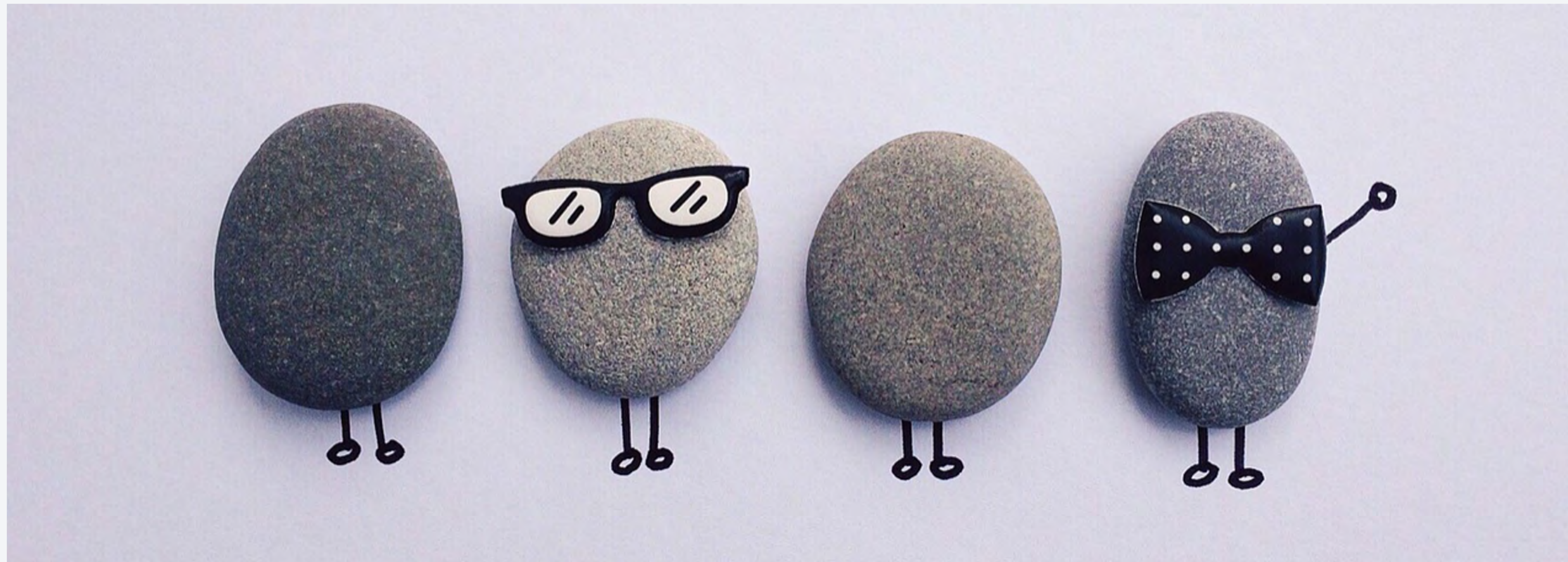
- CRRC conducted anecdotal research of different wall product types
  - Composite Siding
  - Concrete, Brick, or Pavers
  - Pre-painted Fiber Cement Siding
  - Vinyl Siding
- Evaluate possible “off the shelf” substrates
- Understand the Solar Reflectance range of various products





# Interested in Joining the Committee?

- One alternate Industry member vacancy
- Three alternate General Interest member vacancies



- Other attendees and participants welcome!



# WRPC Committee Staff Contact

Jeff Steuben

[jeff@coolroofs.org](mailto:jeff@coolroofs.org)



# Technical Committee and Research Update

George Daisey

Committee Chair

Stacey Weister

CRRC Technical Manager



# Technical Committee Updates

George Daisey  
Committee Chair



Tour of 3M Customer Innovation Center after Committee meeting on May 12, 2022 in Minneapolis, MN

# What is the Technical Committee?

- Advisory committee to the Board of Directors
- Charged with understanding and resolving scientific and technical issues
- Makes non-binding recommendations to the Board





# What is the Technical Committee?

- Diverse and balanced group comprised of 32 members
  - 16 voting and 16 alternate
  - Balance of Industry and General Interest
  - Balance of product types within Industry category
- Meets 4 times per year
  - 2 in-person/call-in
  - 2 virtual
  - Meetings are open to the public



# Committee Roster

2022-2023 Technical Committee Roster with Alternates			
Voting Member	Company	Alternate	Company
Steve Heinje	GAF	Anna Johnson	Arkema
Ronnen Levinson	Lawrence Berkeley National Laboratory	Hashem Akbari	Concordia University
Andre Desjarlais	Oak Ridge National Laboratory	Steven Cuculich	UL
Randy Ober (pending)	Carlisle Construction Materials	Walter McIntosh (pending)	Holcim
Greg Keeler	Owens Corning Roofing and Asphalt	Brendan Dineen	Malarkey Roofing
Bob Zabcik	Metal Construction Association	David Cocuzzi	National Coil Coating Association
Michael Crewdson	Q-Lab Weather Research Service	Richard Slomko	Atlas Material Testing Solutions
Krystal Del Regno	Sherwin Williams	Bill Hendricks (pending)	FSR Treatment, Inc.
Wade Shepherd	Westlake Royal Roofing	Rick Olson	Tile Roofing Industry Alliance
Brent Barbeau	PRI	Payam Bozorgchami	California Energy Commission
Andrew Jambor	ACE Laboratories	Rodney Armstrong	ACE Laboratories
Dan Rardon	Specialty Granules, Inc.	George Daisey, Chair	Dow Construction Chemicals
Kurt Sosinski	Tremco, Inc.	Sid Dinwiddie (pending)	Asphalt Roofing Manufacturers Association
Annette Sindar, Vice Chair	Eagle Roofing Products	Tyler Allwood	Eagle Roofing Products
Rebecca Everman	3M	Maureen Kavanagh	3M
Michael Joyce	R&D Services	Tyler Westerling	Architectural Testing, Inc.

123 *\*pending members will be presented for Board approval on June 15, 2023*





# Changes to Committee Roster

*Since 2022 Annual Meeting:*

- Voting Member departures:
  - Ted Best (Sherwin Williams)
  - Gary Whittemore (Sika Sarnafil, Inc.)
- Voting Member appointments:
  - Krystal Del Regno (Sherwin Williams)
  - Randy Ober (Carlisle Construction Materials)\*

124 *\*pending members will be presented for Board approval on June 15, 2023*



# Changes to Committee Roster

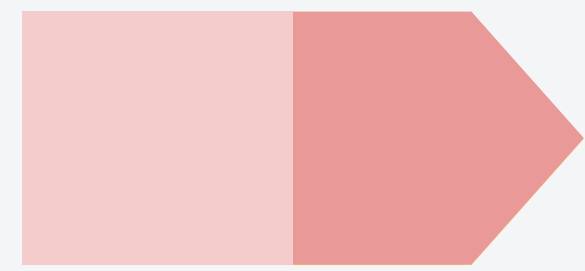
- Alternate Member departures
  - Chad Fisher (UL)
  - Mark Thimons (AISI)
  - Randy Ober (Carlisle Construction Materials)
  - Jennifer O’Neal (Holcim)
- Alternate Members appointed
  - Rodney Armstrong (ACE Laboratories)
  - Steve Cuculich (UL)
  - Walter McIntosh (Holcim)\*
  - Bill Hendricks (FSR Treatment, Inc.)\*
  - Sid Dinwiddie (ARMA)\*

125 *\*pending members will be presented for Board approval on June 15, 2023*

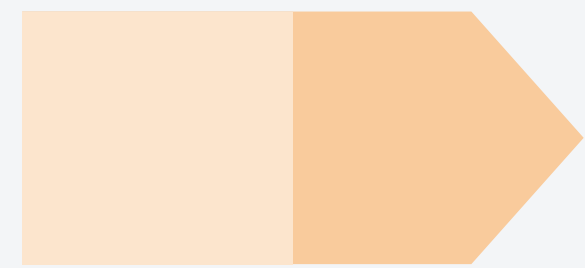




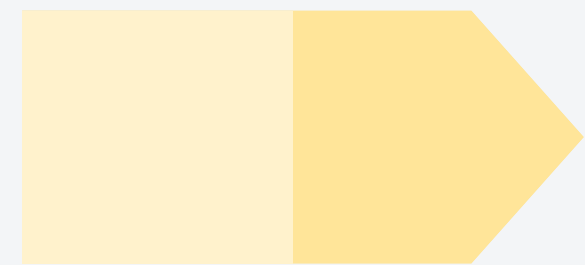
# 2022-2023 Notable Decisions



Recommended offering Rapid Ratings as an option for liquid-applied coatings applied to rough substrates

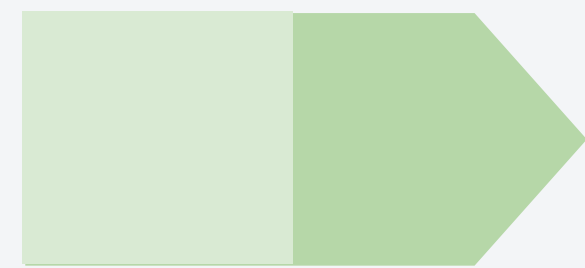


Recommended testing requirements for new product type: multi-shade polymer/composite roofing products



Recommended the inclusion of Standard Laboratory Conditions requirements for the Roof Program and updates to the lab conditions reporting procedure

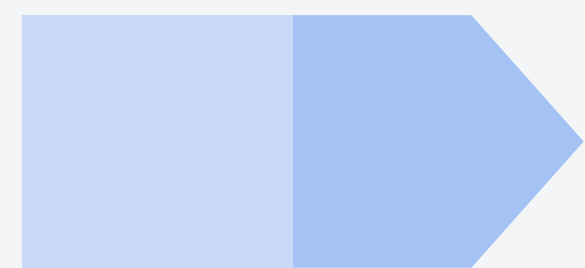
# 2022-2023 Notable Decisions



Recommended clarifying updates to the procedure for verifying the weight of liquid-applied coatings applied to rough substrates



Recommended clarifying updates to the thermal emittance testing procedures for curved roofing products to incorporate the use of bellows

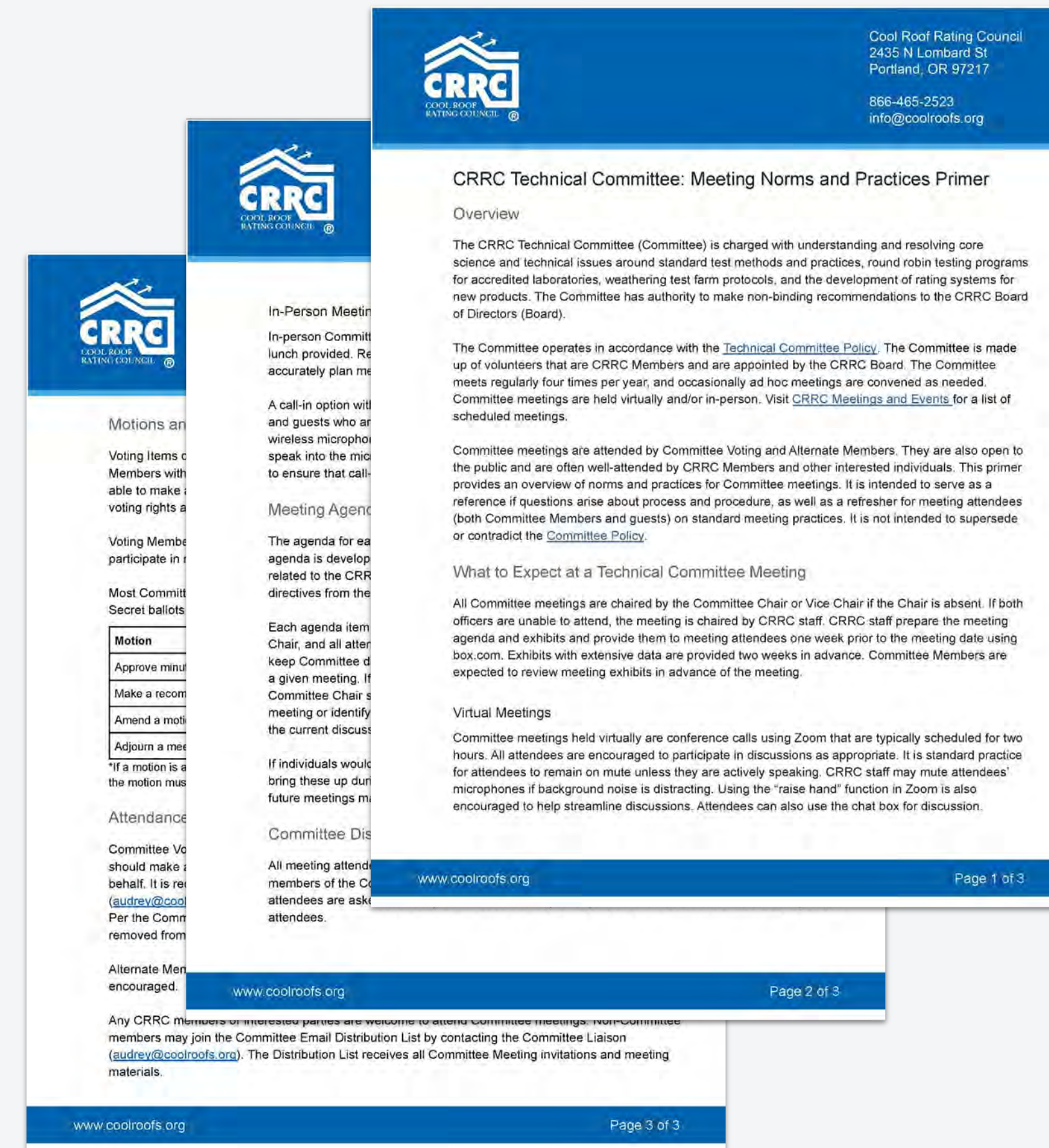


Recommended a new requirement for Test Farms to photograph specimens upon placement for weathering



# New Committee Meeting Primer

- Overview of Committee policy and meeting norms and practices
- Resource for new Committee members and guests
- Available upon request



# Methods & Instruments Subcommittee

M&I Subcommittee is responsible for:

- Evaluating new/modified test methods and devices for measurement of SR and TE
- Making recommendations to the TC on these topics

## M&I Subcommittee Roster

<b>Hashem Akbari</b>	Concordia University
<b>Paul Berdahl</b>	Interested Individual
<b>David Cocuzzi, <i>Chair</i></b>	National Coil Coating Association
<b>Andre Desjarlais</b>	Oak Ridge National Laboratory
<b>Steven Heinje</b>	GAF
<b>Ronnen Levinson</b>	Lawrence Berkeley National Laboratory
<b>Rich Slomko</b>	Atlas Material Testing Technology



# M&I Subcommittee Topics

- Evaluate Surface Optics' ET100 Emissometer for potential use in Product Rating Programs
  - Preliminary evaluation of study results in February 2022
  - Additional investigation in-progress
- Support development of thermal emittance traceable standard
  - Pending Devices & Services' reactivation of project

# Technical Committee Staff Contact

Audrey McGarrell

[audrey@coolroofs.org](mailto:audrey@coolroofs.org)

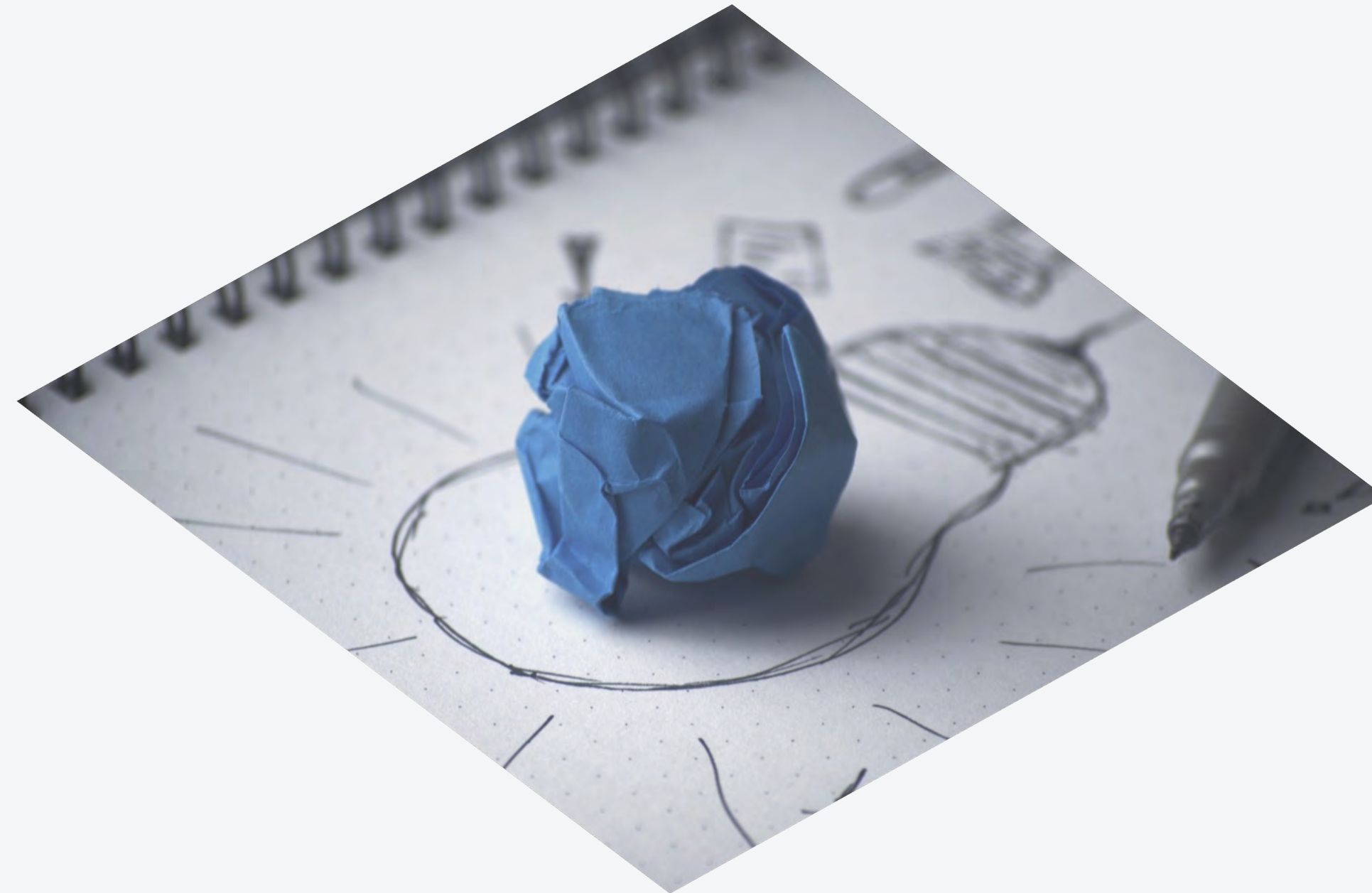




# Technical Research Updates

Stacey Weister

CRRC Technical Manager



# Active Technical Research Projects

- Compilation of Historical Weathering Data
- SOC ET100 Emissometer Interlaboratory Study
- Evaluating Variegated Test Methods Study - Phase 2
- Impact of Cool Roofs and Walls on Peak Power Demand
- CRRC Interlaboratory Comparison Study





# Compilation of Historical Weathering Data

- **Purpose:** Validate or improve upon current CRRC policy for three-year natural exposure of roof products seeking a rating
- **Description:**
  - Analysis of changes to SR and TE values of 27 roofing products over the course of three-year weathering in Arizona, Florida, and Ohio at 5°S and 45°S tilts
  - Determination of whether SR and TE stabilize within three years of exposure and whether rainfall, air quality, and tilt affect changes in SR and TE

# Compilation of Historical Weathering Data

- **Status:** Analysis completed and draft report presented to Committee in May 2023. Final report to be presented to Committee for approval in August 2023





# ET100 Interlaboratory Study

- **Purpose:** Evaluation of the Surface Optics Corporation (SOC) ET100 Emissometer for potential use in the CRRC Product Rating Programs
- **Description:** Nine sets of roof and wall product specimens were circulated to nine labs to perform comparative thermal emittance testing using existing approved methods and the ET100 method.

# ET100 Interlaboratory Study

- **Status:** Testing was completed by nine labs and CRRC staff. The M&I Subcommittee is working with SOC to further investigate the device's applicability to certain product types. Once complete, the findings will be presented to the Technical Committee.



Cool Roof Rating Council

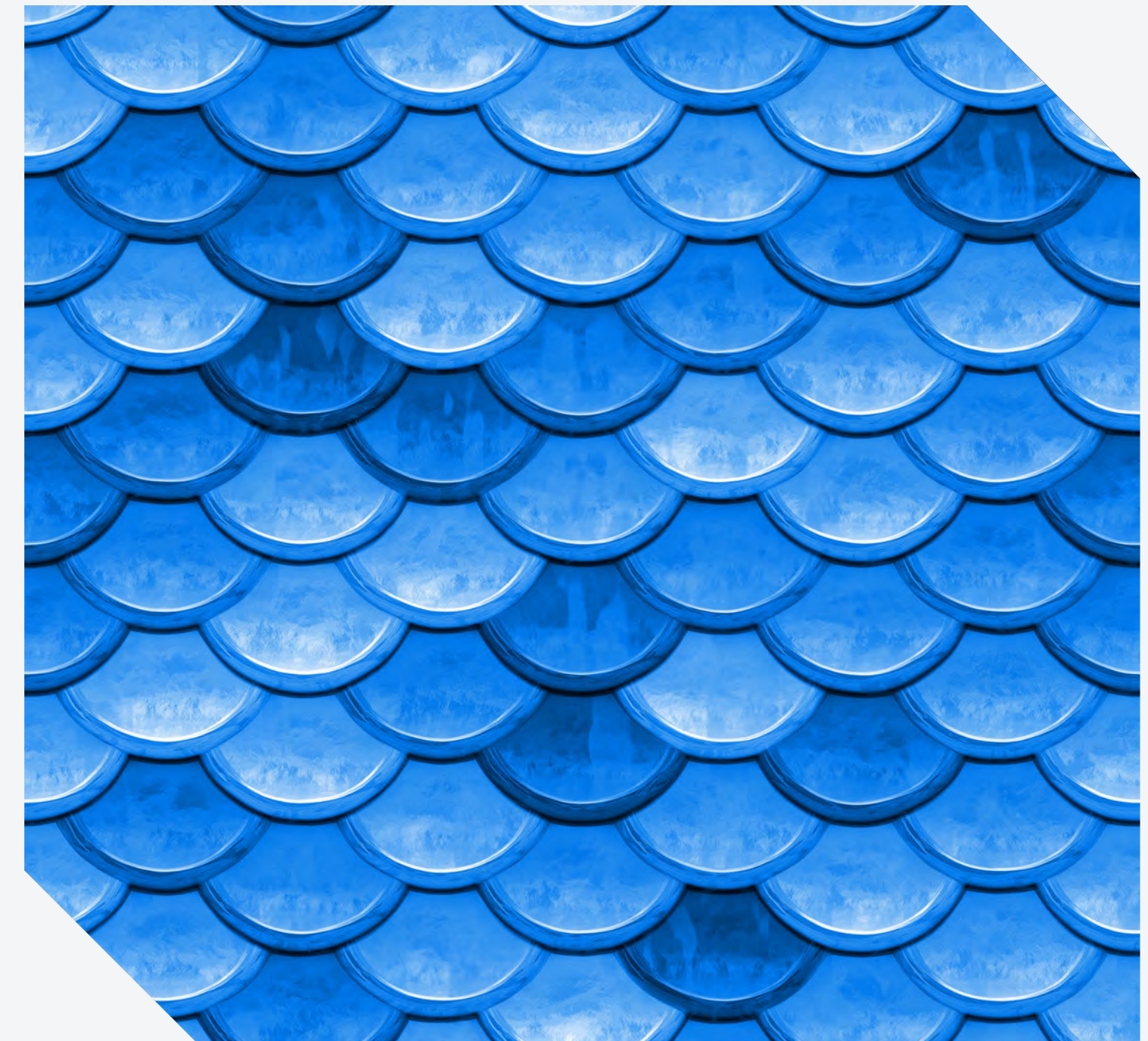


# Evaluating Variegated Test Methods Study - Phase 2

- **Purpose:** Determine if the CRRC's testing requirements for variegated roofing products can be improved. Continuation of the Evaluating Variegated Test Methods (EVTM) study that was conducted in 2021.
- **Description:** Analysis of a large number of measurement simulations on twenty-one unique products.

# Evaluating Variegated Test Methods Study - Phase 2

- **Status:** Preliminary measurements are in-progress. After initial analysis, the findings and any proposed changes to CRRC program requirements will be presented to the Committee. Draft report is targeted to be completed by the end of 2023, and the final technical research report is projected to be completed by the end of the first quarter of 2024.



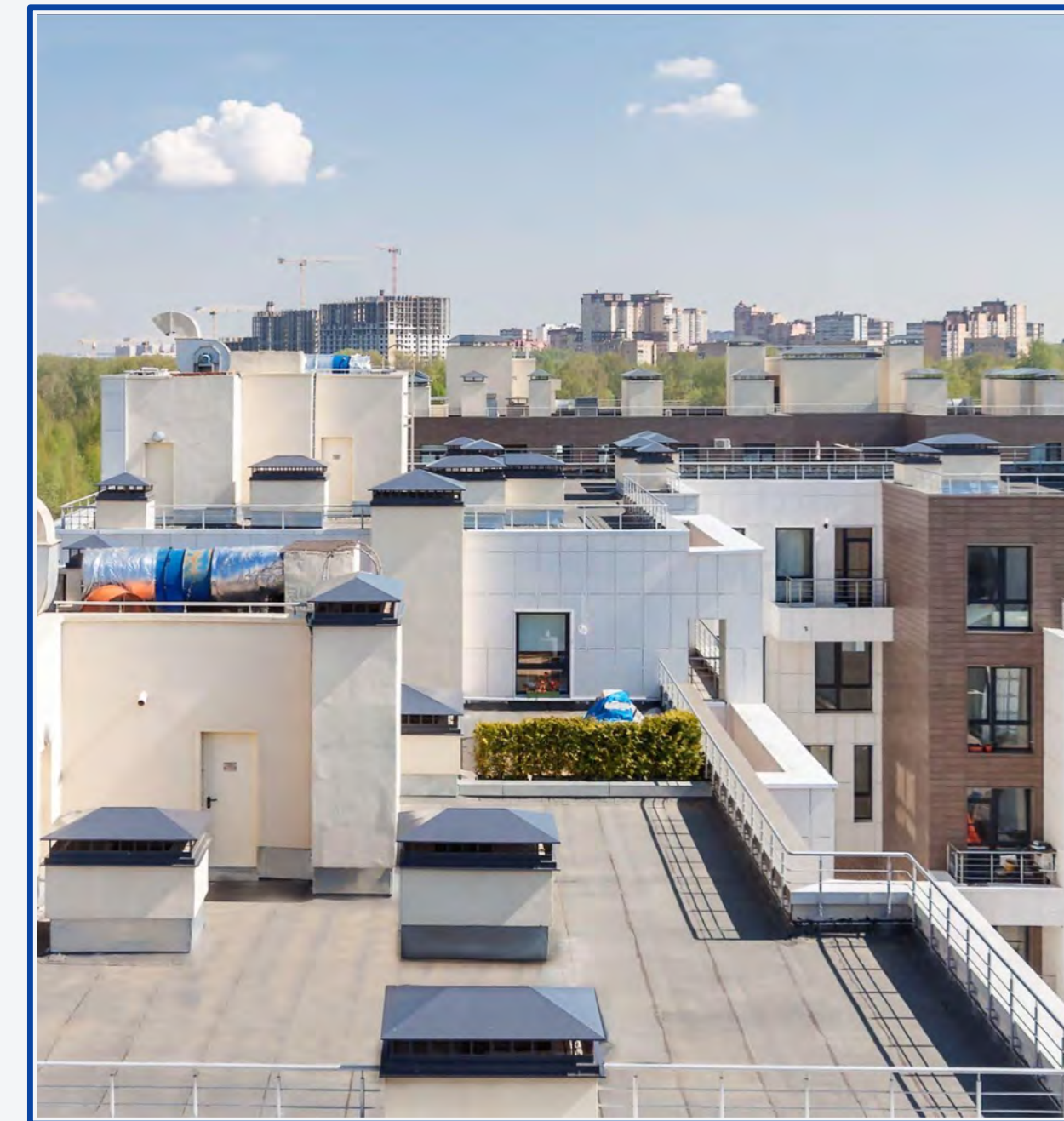


# Impact of Cool Roofs and Walls on Peak Power Demand Study

- **Purpose:** Quantify the energy and economic benefits associated with the deployment of cool roof and exterior wall assemblies as a function of building location, thermal properties of existing roof and wall assemblies, and the cost of energy and ratchet charges.
- **Description:** Partnership with Oak Ridge National Laboratory (ORNL) to perform simulations of the effects of cool surfaces on peak power demand in residential and commercial buildings with set climate and insulation variables.

# Impact of Cool Roofs and Walls on Peak Power Demand Study

- **Status:** ORNL is in the early stages of running building simulations and compiling data on peak energy demand charges. The project is expected to be complete in early 2024. There may be an opportunity for additional phases in the future.





# CRRC Biennial Interlaboratory Comparison (ILC) Study

- **Purpose:** Evaluate testing and reporting consistency among CRRC-approved testing laboratories; ensure testing and reporting compliance; and identify areas for improvement related to test methods, reporting, and training.
- **Description:** Six product types are sent to each participating laboratory. All CRRC independent and manufacturer testing laboratories and test farms are required to test the specimens and submit results to the CRRC. CRRC staff analyze the results to identify areas for improvement.

# CRRC Biennial Interlaboratory Comparison (ILC) Study

- **Status:** 2023 ILC kicked off in early January and six labs have completed testing as of May 2023. The study is expected to be complete by September 2023 with the final results presented the Technical Committee in October 2023.





# Upcoming Project



# Upcoming Project

## Impacts of Cool Surfaces on Un-air-conditioned Buildings

### Literature Review

- Seeks to identify gaps in the current research into the effects of cool roofs and exterior walls installed on occupied, un-air-conditioned buildings in the U.S. with regard to human mortality, health, comfort, and the local economy. The results will help the CRRC identify relevant topics for potential future research.
- Project Proposal recommended by Technical Committee will be presented to Board for approval on June 15, 2023
- Target start date is August 2023



# ASTM Standard Development Activities

- **New Standard:** Supporting SOC in pursuing an ASTM Standard Test Method for their Directional-Hemispherical Solar Reflectance test method  
(*CRRC-1 Appendix 8 / CRRC-2 Appendix 3*)
- **New Standard:** Pursuing new ASTM Standard Test Method for measuring solar reflectance and thermal emittance of aggregate roofing materials less than or equal to  $\frac{5}{8}$ " nominal size  
(*CRRC-1 Appendix 7*)



# ASTM Standard Development Activities

- **ASTM E1918 (*Measuring SR of Horizontal and Low-Sloped Surfaces in the Field*)**: Balloting an alternate method (Method B) for inclusion ASTM E1918.
- **ASTM C1371 (*Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers*)**: Supporting efforts to include the Slide Method as a non-mandatory Appendix in ASTM C1371.  
(CRRC-1 Appendix 1 / Devices & Services TN11-2)



# Technical Research Staff Contact

Stacey Weister

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